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| U.S. Department of Energy<br><br>Office of Independent Oversight<br><br>Criteria Review and Approach Document | Subject: Assessment of the Site Chronic Beryllium Disease Prevention Plan (CBDPP) Implementation<br><br>Director, Office of ES&H Evaluations<br>Date: 2/17/10<br><br>Criteria Lead, Assessment of the Site CBDPP Implementation<br>Date: 2/17/2010 | HS: HSS CRAD 64-37<br>Rev: 0<br>Eff. Date: February 17, 2010<br><br>Page 1 of 7 |

## 1.0 PURPOSE

The focus of this Criteria Review and Approach Document (CRAD) is on evaluating the site's Chronic Beryllium Disease Prevention Plan(s) (CBDPP)(s) to determine if implementation of CBDPPs and practices result in application of adequate controls to protect workers against beryllium hazards in the workplace. Where deficiencies are identified, systems, programs, and practices are reviewed to identify if systemic weaknesses are present.

## 2.0 APPLICABILITY

The following Inspection Criteria document is approved for use by the Office of Environment, Safety and Health (ES&H) Evaluations.

## 3.0 FEEDBACK

Comments and suggestions for improvements on these Inspection Criteria, Approach, and Lines of Inquiry can be directed to the Director of the Office of ES&H Evaluations on (301) 903-5392.

# Assessment of the Site CBDPP
# Inspection Criteria, Approach, and Lines of Inquiry

The following provides an overview of the typical activities that will be performed to collect information to evaluate the design and effectiveness of the site CBDPP. Several terms used throughout this document are defined as follows:

- The term "work activities" encompasses various types of projects including restoration, maintenance, operations, research and development (R&D), and other work activities that could expose the workers, public, or environment to beryllium hazards.
- The term "hazard analysis" includes consideration of the types of hazards addressed by the professional disciplines of human factors, industrial hygiene, medical and occupational health, and occupational safety.

**Inspection Criteria:** The Department of Energy (DOE) and contractor line management ensures that the site contractors and sub-contractors have developed and utilized systematic and effective mechanisms to implement the requirements of the DOE Chronic Beryllium Disease Prevention Program (CBDPP) as defined in 10 CFR 850 *Chronic Beryllium Disease Prevention Program.* CBDPP policies and procedures are developed and effectively implemented to ensure beryllium hazards for all work are identified and appropriately analyzed in a manner tailored to the significance of the hazards. Line management identifies, analyzes, and categorizes beryllium hazards associated with any work activity so that the beryllium hazards are eliminated or appropriate engineering controls, administrative controls, and personal protective equipment (PPE) can be put in place to prevent or mitigate those hazards.

**Inspection Activity:** Through document reviews, interviews, and work observations, evaluate the adequacy of the design, implementation, and oversight of the CBDPP. Review CBDPP policies and implementing procedures. Interview site personnel, including line managers, work planners, beryllium subject matter experts, and workers associated with the CBDPP or beryllium work activities. Review beryllium work packages, procedures, and corresponding hazard identification and analysis documents such as hazard analysis reports, safety plans, job safety analyses, activity hazard analyses, and health and safety plans. Review workplace beryllium hazard baseline surveys, personnel exposure assessments, medical records, and environmental surveillance and monitoring data, as applicable. Review DOE and contractor assurance system procedures and implementation records as they relate to the CBDPP. Observe a sampling of beryllium work activities, if possible. An emphasis will be placed on watching workers perform beryllium-related work using approved work packages and procedures. Evaluators will strive, to the extent possible, to sample a variety of authorized work activities that are available during the data collection schedule.

**Inspection Lines of Inquiry:** The following inspection lines of inquiry address the major elements of a CBDPP as defined in 10 CFR 850. The lines of inquiry are typical and are subject to modification based on the site's beryllium hazards. The lines of inquiry are grouped into four major CBDPP areas; namely beryllium worker exposures and hazard assessments, CBDPP design and administration, beryllium work control practices and hazard controls, and feedback and improvement. For each line of inquiry, a cross reference has been provided to the corresponding section of the Beryllium Rule (10 CFR 850).

# Inspection Lines of Inquiry

## I. Beryllium Worker Exposures and Hazard Assessments

**Does the baseline beryllium inventory identify locations of beryllium operations and other locations of potential beryllium contamination?** (850.20 Baseline Beryllium Inventory)

- Assess the process for reviewing current and historical records related to information on potential beryllium locations. Also, assess how information that is provided by workers knowledgeable of beryllium inventory locations is obtained and recorded.
- Review the characterization data/reports describing, beryllium contaminated facilities.
- Assess the process for conducting air, surface, and bulk sampling in support of the beryllium characterization activities.
- Evaluate the qualifications of individuals assigned to manage the CBDPP.

**Is the beryllium exposure monitoring and hazard assessment process effective in identifying, analyzing, and documenting potential beryllium hazards to worker?** (850.21 Hazard Assessment)

- Assess the adequacy of the hazard assessment process for assessing beryllium exposure data and integrating the data into planned activities, correlating exposures with medical surveillance findings, and maintaining an up-to-date beryllium inventory.
- On a sampling basis, review work control exposure monitoring and hazard assessment documents that address the potential for beryllium hazards.

**To what extent have current workers been potentially exposed to airborne concentrations of beryllium greater that the permissible exposure limit (PEL) of 2.0 micrograms per cubic meter (850.22 Permissible Exposure Limits) or the action level of 0.2 micrograms per cubic meter (850.23 Action Level).**

- Review the adequacy of current and historical air sampling records that are related to the potential or actual beryllium exposure results.
- Assess the capability of historic and current exposure record databases for identifying workers who may have been exposed to beryllium concentrations above the PEL or Action Level.

**Do the workplace air sampling and surface contaminant sampling processes adequately support the characterization of beryllium contamination and workplace exposure monitoring for beryllium?** (850.24 Exposure Monitoring)

- Evaluate procedures for performing beryllium characterization.
- On a sampling basis, review air and surface beryllium sampling results.

## II. CBDPP Design and Administration

**Has a comprehensive CBDPP been developed and implemented in accordance with the requirements of 10 CFR 850?** (850.10, 850.11, 850.12, 850.13)

- Ensure that the site CBDPP has been reviewed by and approved by the Head of the DOE Field Element, including any significant changes or additions to the CBDPP.
- Verify that the CBDPP adequately addresses existing and planned operational tasks and that the detail scope and content of the CBDPP is consistent with the hazard of the activities performed.

- Validate, on a sampling basis, that site contractors are conducting activities in compliance with the approved CBDPP.

**Has the CBDPP established procedures and practices for determining an action level for beryllium, and the actions to be taken in the event the action level is exceeded?** (850.23 Action Levels)

- Assess the activities to be conducted should the beryllium action level be exceeded.
- On a sampling basis, evaluate the effectiveness of one or more of the prescribed activities to be performed if the action level is exceeded.

**Have the medical program requirements of the Beryllium Rule been integrated into the overall medical program (both contractor and subcontractor) and implemented?** (851.11(a)(3)(ii) Development of Worker Safety and Health Programs, 850.34, 850.35, 850.36 Medical Programs).

- Determine the extent to which the site has established and implemented a medical surveillance program for beryllium-associated workers.
- Determine if a medical removal program has been established and the extent of the program.
- Determine the extent to which beryllium-associated workers have been provided with the results of their medical evaluations and the information related to their beryllium exposure that the worker's employer provided to the medical provider.

**Are training programs established for beryllium-associated workers or individuals with potential for casual contact with beryllium?** (850.37 Training)

- Review student and instructor training materials and assess the extent that training objectives are based upon a systematic and graded approach commensurate with the risk and complexity of tasks and the knowledge and skills required for job performance.
- Assess the extent to which beryllium training has been conducted.
- Review the site's process for evaluating the effectiveness of training, such as through examinations and observation of subsequent application of knowledge in the work environment.

**Has the site established and implemented record keeping procedures for beryllium activities?** (850.39 Recordkeeping)

- Review the adequacy of record-keeping practices and record keeping systems for beryllium inventory, hazard assessments, exposure data, and exposure controls information.

## III. Beryllium Work Control Practices and Hazard Controls

**Do work processes provide sufficient means for controlling beryllium during on-going beryllium operations, cleanup and decontamination of beryllium contaminated work areas, and responding to beryllium emergencies?** (850.25 Exposure Reduction and Minimization, 850.33 Beryllium Emergencies)

- Assess procedures, plans, criteria, and strategies for managing beryllium contaminated work areas and equipment or releasing the areas and equipment to another entity.
- Review the decontamination of beryllium in one or more plant areas to ensure the cleanup was properly performed.

**Are there procedures for the establishment and control of Beryllium Regulated Areas?** (850.26 Regulated Areas)

- Assess procedures for the identification and posting of beryllium regulated areas.
- Assess one or more regulated areas, if applicable.

**Are hygiene facilities and work practices adequate where workers are potentially exposed to beryllium at or above the action levels?** (850.27 Hygiene Facilities and Practices). **For these areas,**

- Assess the effectiveness of work practices in change rooms and/or areas to prevent the potential exposure to beryllium.
- Assess showers and hand washing facilities
- Assess lunch room facilities.

**Is the respiratory protection program adequate for applicability to the assignment and use of respiratory protection for beryllium workers?** (850.28 Respiratory Protection).

- Verify that respiratory protection requirements are appropriate for work in areas with airborne concentrations of beryllium.
- Review any previously identified concerns with the respiratory protection program that could impact respiratory protection requirements for beryllium workers.

**Are the practices for establishing protective clothing requirements for beryllium workers consistent with the Beryllium Rule?** (850.29 Protective Clothing and Equipment).

- Review the adequacy of protective clothing requirements for beryllium, as applicable.
- Review procedures for donning and doffing of protective clothing for work in beryllium contaminated areas, as applicable.

**Are housekeeping practices adequate for those operational areas where beryllium is present, if any?** (850.30 Housekeeping)

- Assess the practices for cleaning beryllium contaminated surfaces.
- Evaluate the use of mobile or portable vacuum cleaners for cleaning up beryllium.

**Have criteria and procedures been established for releasing of beryllium-contaminated equipment or other items to other entities?** (850.31 & 850.32 Release Criteria and Waste Disposal)

- Evaluate the practices for the control of beryllium-containing waste and other items that are released to the general public or a non-beryllium use area within the DOE complex to ensure the contamination limits are correct and procedure(s) are in place and adequately followed.
- Assess the practices for ensuring beryllium-containing and –contaminated wastes are properly containerized and labeled.

**Are warning signs and labels for beryllium hazards and beryllium contaminated areas appropriate?** (850.38 Warning Signs & Labels)

- Inspect the signage for typical beryllium work areas for consistency with the CBDPP.
- Assess the labeling on beryllium contaminated materials for consistency with the CBDPP.

## IV. Feedback and Improvement

**Does the contractor assurance system (feedback and improvement processes) adequately ensure the effectiveness of the chronic beryllium disease prevention program as required by 10 CFR 850 and DOE Directives?** (850.40 Performance Feedback)

- Assess whether deficiencies identified under previous CBDPP programs have been adequately analyzed and addressed in the development of the current CBDPP.
- For beryllium work activities, determine if formal post-activity review processes (e.g., post-job reviews, operations reviews) have been established and are effectively used.
- Assess if feedback from workers is effectively solicited and used during work planning, execution, and closeout.
- Determine if employee concerns related to the CBDPP have been properly investigated and resolved in accordance with site procedures and DOE directives.
- Identify mechanisms provided to involve workers and their elected representatives in the development of the worker safety and health program goals, objectives, and performance measures, as required by 10 CFR 851.
- Determine if beryllium related lessons learned are identified and incorporated into the training curriculum, work planning activities, and the work authorization process.
- Verify that assessment activities encompass the areas specified in 10 CFR 850.40 and include observation of beryllium work activities by managers, supervisors, and subject matter experts.
- Determine if beryllium related deficiencies and weaknesses identified during work activities and assessments are appropriately documented and managed in accordance with site issues management processes. Verify that appropriate extent of condition reviews have been conducted and that effective corrective actions and recurrence controls are developed and implemented as required by site procedures and DOE directives.
- Evaluate the process to link data on workplace conditions and health outcomes in order to establish a basis for understanding the beryllium health risk.
- Determine if the implemented CBDPP ensures that the results of program analyses and assessments is communicated to managers, planners, worker protection staff, workers, medical staff, and labor organizations for workers who request such information as required by 10 CFR 850.40.

**Have DOE field elements established and effectively implemented a comprehensive oversight program (i.e., assessment, review, operational awareness, and employee concern processes) to ensure that the contractor's CBDPP is compliant with and effectively implements 10 CFR 850?**

- Verify that DOE field element oversight activities include sufficient evaluation of the contractor CBDPP and ensures effective implementation of the program by the contractor. Oversight activities should assure that the CBDPP reflects mission changes, medical surveillance findings, performance indicators, administrative considerations and other factors that would effect compliance with 10 CFR 850.

- Verify that the field element oversight ensures that the CBDPP provisions adequately address the protection of, and communication with, Federal employees observing beryllium work activities.
- Determine if employee concerns reports to DOE related to the CBDPP have been properly investigated and resolved in accordance with site procedures and DOE directives.